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A glance at COVID-19 in Turkey with the concepts of health and poverty since Edwin Chadwick until today: Diyarbakir example

Covid-19, health and poverty

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Abstract
Aim: The aim of this study was to evaluate the direction of the pandemic spread on monthly COVID-19 case density maps in 4 districts of Diyarbakir city in the application software of the Republic of Turkey Ministry of Health "Hayat Eve Sığar (Life Fits Into Home)", in terms of socio-economic development indices based on Edwin Chadwick's relationship between health and poverty concepts.
Material and Methods: COVID-19 cases density maps in the same central districts over the last 5 months, and the amount of propagation and density of the pandemic in those districts were determined.
Results: When comparing areas of Diyarbakir with low and high socio-economic status, a parallelism was found between the density of the pandemic and the direction of spread.
Discussion: The vicious circle of poverty constantly creates negative health consequences in the presence of an unhealthy environment and low socioeconomic status.

Keywords
COVID-19; Poverty; Socioeconomic; Development index; Pandemic

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Introduction

A pandemic is the spread of a disease, an infectious agent, or a health-related problem in various countries or a continent, and even in a very wide area such as the whole world (available at: https://hsgm.saglik.gov.tr/depo/mevzuat/genelge/Bulasici_Hastaliklar_ile_Mucadele_Rehberi_Ustyazi.pdf). In December 2019, it was announced that an outbreak of an unknown cause with symptoms of severe pneumonia had started in Wuhan, the capital of China's Hubei province. Right after, on January 7, 2020, Chinese scientists determined that these patients with pneumonia were actually infected with a new type of coronavirus. Later, in February 2020, this table was named COVID-19 by the World Health Organization (WHO) and declared a pandemic [1].

Due to the destruction they cause, pandemics are forcing governments to revise their health policies and plans. While pandemics significantly threaten the human life cycle and social life, they occur more and more frequently. The history of mankind has lived through pandemics for centuries. Historically, some of the outbreaks that occurred are plague pandemics and smallpox epidemics in the 14th century; cholera pandemics in 1879-81, the Spanish flu in 1918-20, the Asian flu in 1957-58, the Hong Kong flu in 1968-69, the bird flu (H5N1) in 2005 and the swine flu (H1N1) in 2009. The last the coronavirus (Covid-19) pandemic that has started at the end of 2019, continues today.

As the outbreak started at the beginning of 2020 and spread all over the world in a short period of 3 months, governments, including those of developed countries, have been inadequate due to economic, social, psychological and health infrastructure reasonsö and have been inconsistent/indecisive in terms of pandemic management and transparency in sharing information. The attitudes of governments such as Brazil and America, which argue that even the newly defined measures to be taken against the transmission of the disease and its symptoms are unnecessary, have led to very serious problems in the control of the pandemic (an increase in the number of cases and deaths).

From a public health perspective, two important concepts affected the existing health policies and plans of the countries at the end of the 19th century. The first of these is the concept "health and poverty (inadequacy of the working class with a low socioeconomic status in the matter of their health)" in the 1840s; and the other "health promotion and maintenance", which was defined by WHO in the 1980s.

According to the World Bank, poverty is the case of "hunger, the onset of illness, not being able to go to school or not knowing how to read, not having a job, not being able to sustain daily life, having fear of the future, high child mortality, lack of security, weakness and limited freedoms" [2]. The United Nations Development Programme (UNDP) describes the "Multidimensional Poverty Index" as recognition that poverty deprives families of health, education, and living standards and the ability to live in dignity (available at: https://feature.undp.org/covid-and-poverty/).

The fact that the income of individuals during the treatment of diseases is not enough to gain their health due to poverty, and that they physically push themselves too much to get out of this unhealthy situation (due to earnings, healthy housing, access to health services), will end in a vicious cycle of poverty and disease.

While the presence of diseases and poverty trigger each other in a vicious circle, this vicious circle had to be broken in the matter of income so that people could reach the concept of being a healthy individual, which is difficult to reach.

When different factors, such as the fact that the concept of promotion and maintenance of health and the concepts of poverty and diseases could not be presented or were not presented adequately and at the same time in a society in terms of both socio-economically and health services, and the life struggle of those who live in regional settlements as a result of the economic problems, come together conceptually, the common occurrence of possible infectious and non-infectious diseases in individuals according to the literature information happens to be an expected situation. It is known that global outbreaks like the COVID-19 manifest themselves at the highest levels in terms of influence in economically inadequate neighborhoods, districts, and provinces of countries and cities.

This study aims to evaluate the direction of spread of the pandemic on monthly maps of COVID-19 cases density in 4 districts in the city of Diyarbakir (data for 1 day of each month) in the application software "Hayat Eve Sığar (Life Fits Into Home)", which was developed by the Republic of Turkey Ministry of Health in March 2020 and can be installed on mobile phones; in terms of socio-economic development indices, based on Edwin Chadwick's relationship between health and poverty concepts.

Health and poverty

In the "Report on the Sanitary Conditions of the Labouring Population of Great Britain" published by Edwin Chadwick in 1842, he stated that the bad conditions in which poor people live constantly cause unhealthiness, and as a result, premature deaths occur in the low-income areas of the cities. Chadwick suggested that there is a positive connection between poor living conditions and the development and spread of diseases; and that the government must intervene by providing clean water, improving the drainage systems, and making sure that the local councils get the garbage from homes and streets cleaned. Chadwick stated that the poor conditions that the impoverished and sick workers have to endure, prevent them from working efficiently, and since they cannot participate in the production, their poverty rate increases, and their state of illness continues (available at:https://navigator.health.org.uk/theme/report-sanitary-conditions-labouring-population-great-britain; Çilingiroğlu N. Demography and Health. Ed. Güler Ç., Akın L. From the Book of Basic Information on Public Health Volume I. Ankara: Hacettepe University Publications, 2012).

The main idea of the report, published in the 1840s, around the time the Queen of England was given the task of examining the living conditions of the workers who live in poor neighborhoods in the industrial areas, was actually describing a single cycle to the leaders of the past and present.

Poor countries tend to have worse health outcomes than better-off countries. Within countries, poor people have worse health outcomes than better-off people. The association between poverty and ill-health reflects a two-way causal relationship [3].

Patel et al. (2020) stated in their study that many factors increase the exposure of people with low socioeconomic status (SES) to COVID-19 [4]. These factors can be listed as follows:

1. First, economically disadvantaged people are more likely to live in overcrowded accommodation.
2. Financially poorer people are often employed in occupations that do not provide opportunities to work from home.
3. Those in low SES groups are more likely to have unstable work conditions and incomes, conditions exacerbated by the responses to COVID-19 and its aftermath. Such financial uncertainty disproportionately harms the mental health of those in low SES groups and exacerbates their stress. Heightened stress is known to weaken the immune system, increasing susceptibility to a range of diseases and the likelihood of health risk behaviors. Therefore, poverty may not only increase one's exposure to the virus but also reduce the immune system's ability to combat it.
4. People with low SES present to healthcare services at a more advanced stage of illness, resulting in poorer health outcomes. This will likely lead to poorer health outcomes from COVID-19 for economically disadvantaged people [4].

On behalf of the United Nations, in the United Nations Development Programme's report that offers information and analysis of evaluations on the socioeconomic impacts of COVID-19 around the world, what are the main socio-economic problems caused by the pandemic, and the socio-economic impacts of COVID-19 on economies and societies, it was observed that according to many results obtained in the study conducted between March-May 2020 "Survey on Impact of COVID-19 on Enterprises in Turkey", almost half of the enterprises in the country have stopped operating, 54% have lost more than half of their workload, half of them are having difficulties with the procurement, half of them are having problems with the payments, only 41% of them are capable of working remotely and the COVID-19 crisis has affected the female workers more negatively (available at:https://www.undp.org/content/undp/en/home/coronavirus/socio-economic-impact-of-covid-19. html.). These results will show a negative reflection of the pandemic on citizens with low-income socioeconomic status.

Health promotion and maintenance

According to the 1948 constitution of WHO, health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity (available at:https://www.who.int/healthpromotion/about/HPR%20Glossary%201998.pdf). The concept of health promotion and maintenance has been emphasized since the Ottawa Charter for Health Promotion was signed at the first International Conference on Health Promotion in Ottawa, Canada in 1986; and studies in the field of public policy have been conducted by the states (available at:https://www.who.int/healthpromotion/conferences/6gchp/hpr_conference_background.pdf, available at:https://www.who.int/healthpromotion/conferences/hpr_special%20issue.pdf?ua=1).

According to the charter, "Health promotion is the process of enabling people to increase control over, and to improve, their health" (available at: https://www.who.int/teams/health-promotion/enhanced-wellbeing/first-global-conference). Health promotion and maintenance also include actions to change social, environmental, and economic conditions [5].

The processes included in the concept itself have the potential to control outbreaks, reduce the disease burden of non-infectious diseases and social injustice. Health promotion and maintenance are essential to effectively address global public health issues and successfully reduce the burden of disease-related inequalities (available at: https://www.who.int/mediacentre/events/ meetings /7gchp / en/).

The concept of health promotion reaffirms a positive view, describing not only disease prevention but also how to expand and advance one's life potential [6]. Health promotion includes measures to continually improve physical health.

Health protection offers equal opportunities for people to enjoy the highest attainable level of health and is achieved through the development and implementation of legislation, policies, and programs in the areas of environmental health protection and community care facilities. Protection of public health focuses mainly on situations such as controlling infectious diseases, protecting the public against environmental hazards. Health protection aims at reducing the likelihood that people will encounter environmental hazards or behave in unsafe or unhealthy ways. The interventions are aimed at preventing people from falling into sickness or illness by building protective mechanisms [7, 8]. Preventive actions are defined as interventions directed to averting the emergence of specific diseases and reducing their incidence and prevalence in populations [7].

In this study, we will try to determine the direction of propagation and density of the COVID-19 pandemic in districts that are insufficient and sufficient in terms of socio-economic development index.

Material and Methods

In this study, the direction of propagation and density of the COVID-19 in 4 districts in the city of Diyarbakir in Turkey were tried to be determined using monthly images (case density map data for 1 day of each month) in the application software "Life Fits Into Home", developed by the Ministry of Health in March 2020, which is open to the public, free and can be downloaded from Google Play and installed on mobile phones without permission.

The socio-economic development indices of the 4 central districts in Diyarbakir were ranked based on the 2017 socio-economic development ranking of the Ministry of Industry and Technology concerning the cities. The socioeconomic development levels of the districts and the covid-19 prevalence densities in the districts are shown.

Results

There are 4 districts in Diyarbakir: Sur, Yenishehir, Baglar and Kayapinar (Figure 1). The rankings of these districts by population and socioeconomic development are shown in Table 1. (available at: https://www.sanayi.gov.tr/bolgesel-kalkinma-faaliyetleri/analitik-cal%C4%B1smalar/01122b, http://www.diyarbakir.bel.tr/diyarbakir/genel-bilgiler/ilce-nufus.html).

According to Table 1, Sur and Baglar districts are the two central districts with the lowest scores in terms of socioeconomic indicators. Development rankings were generated with 32

different variables used to create socioeconomic indicators for provinces in Turkey. These variables consist of 7 main headings: demographic, employment, education, health, competitiveness, financial, and quality of life. These main headings have 32 subheadings in total. The data generated in the table as a result of all these classifications and advanced analyses create the clearest indicators of the direction in which the conditions of a district in terms of health and work have evolved. In other words, the ranking goes from the districts with the highest number of unemployed and unhealthy individuals up to to the districts with the least.

The majority of the first rank developed districts are located in the most developed provinces of Turkey. In terms of geographical regions, it is seen that 32 districts are included in the Marmara region, 11 in the Aegean, 6 in the Central Anatolia, 5 in the Mediterranean, one district in the Black Sea, and one in the Southeastern Anatolia. From the Southeastern Anatolia region, Shehitkâmil district of the province Gaziantep is included. On the other hand, the reason why only 1 (Yenishehir) district from Diyarbakir is among the second-rank districts is that there are existing structures such as industrial areas, state offices, etc. and the public employees and retired people are high in number in the district (available at: https://www.sanayi.gov.tr/bolgesel-kalkinma-faaliyetleri/analitik-cal%C4%B1smalar/01122b).

The COVID-19 case density maps of the central districts in Diyarbakir and their proximity to each other by location are shown in Figure 2 (available at: https://webdosya.csb.gov.tr/db / diyarbakir/webmenu/webmenu3229.jpg).

When the 5 maps in Figure 2 are ranked according to the locations of the central districts: located in the lower end as shown in the case density maps is the Sur district, which is the historical part and center of the city. Next to it are its neighboring districts Baglar and Yenishehir, and in the last section, there is Kayapınar district, where the socioeconomic status and residential areas are more developed compared to the other 3 districts.

Based upon the COVID-19 case density map, it was determined that the spread of the disease in the 4 central districts of Diyarbakır increased dramatically in districts where poverty and unemployment are intense according to socioeconomic development indices. In other words, it shows that where the socioeconomic and health indicators are low, the density of the disease is higher than in the other districts.

Table 1. The Socioeconomic Development Ranking of the Central Districts in Diyarbakır*

District	Population**	Overall Rank within the Country	Rank within the Province*	Score	Rank
Yenişehir	210.927	109	1	1,206	2
Kayapınar	381.414	319	2	0,166	3
Bağlar	396.102	443	3	-0,117	3
Sur	106.108	840	5	-0,924	5

*: Ministry of Industry and Technology (https://www.sanayi.gov.tr/bolgesel-kalkinma-faaliyetleri/analitik-cal%C4%B1smalar/01122b),
**: Diyarbakır Municipality (http://www.diyarbakir.bel.tr/diyarbakir/genel-bilgiler/ilce-nufus.html).

Figure 1. Map of Diyarbakır (https://webdosya.csb.gov.tr/db/diyarbakir/webmenu /web menu 3229. jpg).

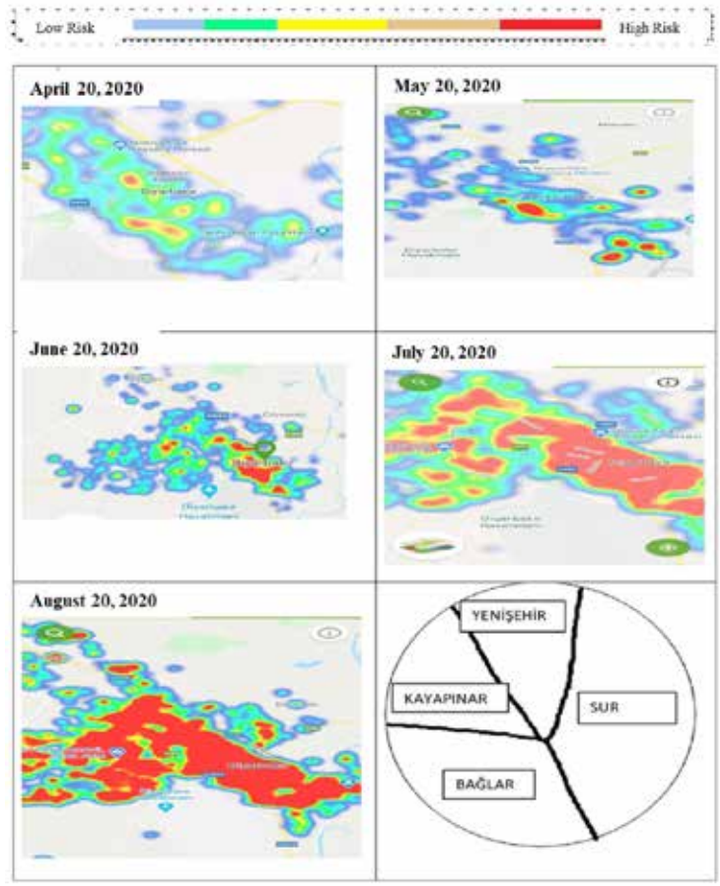

Figure 2. The Covid-19 case density maps of the central districts in Diyarbakır and their proximity to each other by location

Discussion

The Human Development Index, which is measured by taking into account the per capita income, life expectancy at birth, literacy, and schooling rates, has been published by UNDP each year for countries since 1990. Human development is also measured with education and health data as well as income. It was stated that in the 2017 report, Turkey's human development index score was 0.767ö and the country was ranked 71st. According to this score, Turkey was found to be in the "High Human Development" group among other countries. In the study "Human Development Index-Districts (HDI-D) 2017 Transition from Consumer to Human" of the Human Development Foundation, it was stated that as well as education, indicators in the field of health are

among the unchanging indicators of human development, and based on the study conducted in this context, the Health Index status of the districts, which is a subdimension of the HDI-D, was determined.

According to these results, indices of the districts are defined as follows: the highest group as green, the high group as blue, the middle group as yellow, and the low group as red. Baglar, Kayapinar, Yenishehir and Ergani districts from the city of Diyarbakır were included in the study sample, but Yenishehir was not included in the study because the district data could not be obtained. In the results of this report, Baglar district was found to be in the red group (low) with a health index score of 0,281 and Kayapinar in the yellow group (middle), with a health index score of 0,406 (available at: http://ingev.org/raporlar/ IGE RAPOR 2017.pdf.). This result show parallelism with the COVID-19 case density maps of the central districts in Diyarbakır.

In the study conducted by Finch and H. Finch in 2020 regarding the potentially high degree of vulnerability to the effects of the COVID-19 pandemic for people living in poverty using data collected over 71 days were used, the relationship between poverty and the number of confirmed COVID-19 cases and deaths early in the pandemic in the United States was examined. According to the study, early in the pandemic, poorer counties had a higher rate of confirmed cases than did relatively fewer poor areas, and the death rate was higher for relatively poorer counties [9]. In our study, according to the socio-economic development ranking, it is seen that the case density increases in the central districts with low socioeconomic status as the duration of the pandemic extends. These findings are similar.

One of the main problems of cities since E. Chadwick until today beyond any doubt is the unhealthy environments in which poor families live and the fact that low socio-economic status creating negative health consequences in the presence of a disease. This outcome has not changed even in the last 140 years and has once again manifested itself with the COVID-19 pandemic. It showed that this situation should be reviewed by the decision-makers who determine the country's health and socio-economic policies.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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